

Amendments to the Claims

5 Please cancel claims 3, 7-17 and 20, amend claims 1 and 4, and add new
claims 21-31 as shown in the following list of claims. This listing of claims will
replace all prior versions, and listings, of claims in the application.

- 1 1. (currently amended) An apparatus for controlling the position of a screen
2 pointer, the apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the digital images each include a set of active pixels and a set of
12 spare pixels, and wherein the navigation sensor is configured to detect defective
13 pixels in the digital images.
- 1 2. (original) The apparatus of claim 1, wherein the light source is a laser light
2 source.
- 1 3. (canceled).
- 1 4. (currently amended) The apparatus of claim 1 ~~3~~, wherein the movement
2 computation comprises a correlation of the set of active pixels from the digital
3 images, and wherein defective pixels in the digital images are not included in the
4 correlation.

1 5. (original) The apparatus of claim 4, wherein the navigation sensor is
2 configured to cause a spare pixel to become an active pixel when the navigation
3 sensor detects a defective pixel.

1 6. (original) The apparatus of claim 5, wherein the navigation sensor is
2 configured to cause a pixel to be deactivated if the navigation sensor detects that
3 the pixel is defective.

1 7. (canceled).

1 8. (canceled).

1 9. (canceled).

1 10. (canceled).

1 11. (canceled).

1 12. (canceled).

1 13. (canceled).

1 14. (canceled).

1 15. (canceled).

1 16. (canceled).

1 17. (canceled).

1 18. (original) A method of generating movement data with an optical pointing
2 device, the method comprising:
3 illuminating an imaging surface with an at least partially coherent light
4 source, thereby generating reflected images;
5 generating digital images based on the reflected images; and
6 generating movement data based on the digital images, wherein the
7 movement data is generated based on movement calculations that have a low
8 sensitivity to image effects caused by particle contamination.

1 19. (original) The method of claim 18, wherein the light source is a laser light
2 source.

1 20. (canceled).

1 21. (new) An apparatus for controlling the position of a screen pointer, the
2 apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the navigation sensor is configured to detect defective pixels in
12 the digital images, and identify a sub-array of pixels within the digital images that
13 do not include any defective pixels.

1 22. (new) The apparatus of claim 21, wherein the movement computation
2 comprises a correlation of the sub-array of pixels from the digital images, and
3 wherein pixels outside the sub-array in the digital images are not included in the
4 correlation.

1 23. (new) An apparatus for controlling the position of a screen pointer, the
2 apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the movement computation comprises a correlation of temporal
12 differences in a set of the digital images.

1 24. (new) The apparatus of claim 23, wherein the set of the digital images
2 includes four consecutive digital images, and wherein the movement computation
3 comprises subtracting a first set of two of the four digital images to generate a first
4 difference image, subtracting a second set of two of the four digital images to
5 generate a second difference image, and correlating the first difference image with
6 the second difference image.

1 25. (new) An apparatus for controlling the position of a screen pointer, the
2 apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the movement computation comprises summing pixels values
12 from a first one of the digital images, thereby generating a first plurality of sums,
13 summing pixel values from a second one of the digital images, thereby generating
14 a second plurality of sums.

1 26. (new) The apparatus of claim 25, wherein the movement computation
2 further comprises correlating the first plurality of sums with the second plurality
3 of sums.

1 27. (new) The apparatus of claim 25, wherein the digital images each include a
2 plurality of rows of pixels and a plurality of columns of pixels, and wherein the
3 movement computation comprises summing pixel values in each row of the digital
4 images, thereby generating a plurality of row sums for each digital image, and
5 summing pixel values in each column of the digital images, thereby generating a
6 plurality of column sums for each digital image.

1 28. (new) The apparatus of claim 25, wherein the movement computation
2 further comprises correlating the plurality of row sums from the first one of the
3 digital images with the plurality of row sums from the second one of the digital
4 images, and correlating the plurality of column sums from the first one of the
5 digital images with the plurality of column sums from the second one of the
6 digital images.

1 29. (new) An apparatus for controlling the position of a screen pointer, the
2 apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the movement computation comprises correlating the digital
12 images, thereby generating at least one correlation peak, and wherein the
13 navigation sensor is configured to determine if the correlation produces a false
14 correlation peak corresponding to zero displacement caused by defective pixels.

1 30. (new) The apparatus of claim 29, wherein the navigation sensor is
2 configured to determine if the correlation produces a false correlation peak by
3 monitoring a set of pixels in the digital images and determining whether pixel
4 values from the set of pixels are changing by a threshold amount.

1 31. (new) The apparatus of claim 29, wherein the navigation sensor is
2 configured to determine if the correlation produces a false correlation peak by
3 determining if the correlation produces a secondary peak corresponding to a non-
4 zero displacement with a peak magnitude that is greater than a threshold value.